

$$f(10-x) \geq f(x+1)$$

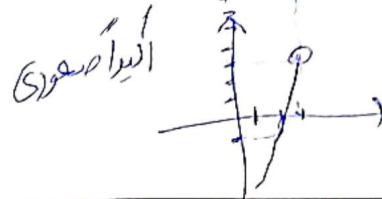
$$10-x \geq x+1$$

$$9 \geq 2x$$

$$4.5 \geq x$$

$$D_f = (-\infty, 4.5]$$

$$f(x) = \begin{cases} 3x-1 & x \geq 10 \\ 10-x & x < 10 \end{cases}$$



$$f(x) = (x^3 + x)^{10}$$

$$f \circ f(x) < f(x)^2$$

$$f(x) < x^{10}$$

$$(x^3 + x)^{10} < x^{10}$$

$$x^3 + x < x$$

$$x^3 < 0$$

$$x < 0$$

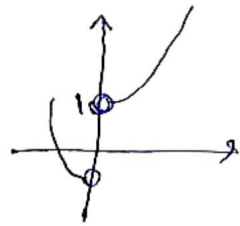
$$x \in (-\infty, 0)$$

$$g = |x| \left(x^2 + \frac{1}{x} \right)$$

$$x^3 + 1 \quad x > 0$$

$$-x^3 - 1 \quad x < 0$$

غیر صاف

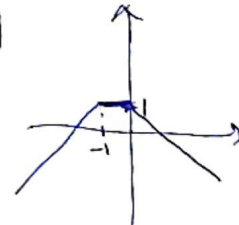


$$f(x) = \frac{2x+1}{|x|-|x+1|} \times \frac{|x|+|x+1|}{|x|+|x+1|} = -|x| - |x+1|$$

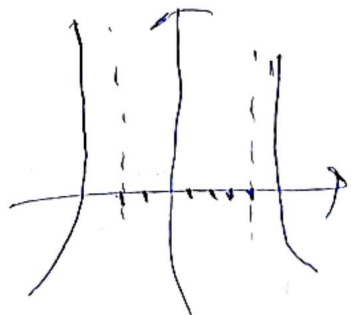
$$x^2 - x^2 - 2x - 1$$

$$(-\infty, 1]$$

$$a = 1$$



$$y = 1 + 2 \left(x^2 - 2x - 1 \right)^{\frac{1}{2}}$$



$$(-\infty, -2) \cup (2, \infty)$$

$$(a^2 - 1)^x$$

$$a^2 - 1 > 1 \Rightarrow a^2 - \varepsilon > 0 \quad a \in (-\infty, -2) \cup (2, +\infty)$$

$$a^2 - 1 = 1 \Rightarrow a^2 = 2 \Rightarrow a = \pm \sqrt{2}$$

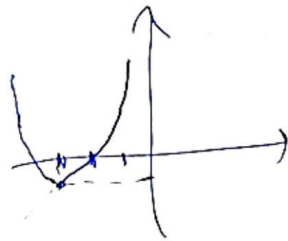
$$a^2 - 1 = 1 \Rightarrow a = \pm \sqrt{2}$$

$$a \in (-\infty, -2] \cup \{-\sqrt{2}\} \cup \{\sqrt{2}\} \cup [2, +\infty)$$

$$f(x) = (x+1)^2 - 1$$

$$(1+\infty) = (-1, +\infty)$$

$$y = |f(x)|$$



$$h = -1$$

$$f(x) \leq f(\sqrt{x}) \quad f(x) = x + \sqrt{x} - 1$$

$$f(x) \leq \sqrt{x}$$

$$x + \sqrt{x} - 1 \leq \sqrt{x}$$

$$x \leq 1$$

$$\sqrt{x} \Rightarrow x \geq 0$$

$$x \in [0, 1]$$

استخرج من $\mathbb{R}$ و $\mathbb{C}$

$$\sqrt[3]{9 \cos^2 x - 1} - \sqrt[3]{1 - 9 \cos^2 x}$$

$$9 \cos^2 x \leq 1 \Rightarrow 0 \leq 9 \cos^2 x \leq 9$$

$$\Rightarrow -1 \leq \cos^2 x \leq 1$$

$$\Rightarrow -1 \leq \sqrt{9 \cos^2 x - 1} \leq 1$$

$$\Rightarrow \frac{1}{3} \leq \sqrt[3]{9 \cos^2 x - 1} \leq 1$$

$$t - \frac{1}{t} = \frac{t^2 - 1}{t}$$

$$\frac{18}{2} + \frac{10}{2}$$

$$= \frac{28}{2}$$

$$\frac{1}{2} - 1 = -\frac{1}{2} = \frac{18}{2} - \frac{10}{2}$$

$$[-\frac{10}{2}, \frac{18}{2}]$$

$$f(x) = x - [x] - 1 \quad [0, 1)$$

$$R_f = [-1, -1)$$

$$R_{g \circ f} = ?$$

$$g = \frac{1^x - 1}{x}$$

$$1^x = t$$

$$g \circ f = \frac{t^x - 1}{t^x}$$

$$R_{g \circ f} = [-\frac{18}{2}, -\frac{10}{2}]$$

$$[-1, -1) = [-\frac{1}{2}, \frac{1}{2})$$

$$\frac{1}{2} - 1 = -\frac{1}{2}$$

$$\frac{(\frac{1}{2})^x - 1}{\frac{1}{2}} = -\frac{10}{2}$$